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Increasing interest in landscaping resulting from a growth in construction, the recent national emphasis on beautification, and expansion of outdoor recreational facilities has created a demand for personnel trained in landscape installation and maintenance. This guide provides suggestions for: (1) initiating one- and two-year programs in landscape horticulture, including available program assistance, the advisory committee, and relations with the community; (2) developing the curriculum, including courses, curriculum programs, and work experience programs; (3) selecting instructors and facilities, including sources of instructors, physical facilities, and instructional equipment; (4) enrolling the student; and (5) placing graduates. Graduates may be employed in state, city, and county governments, school districts, cemeteries, parks and recreation agencies, golf courses, industrial sites, offices, and private companies. They may also be self-employed. (MC)

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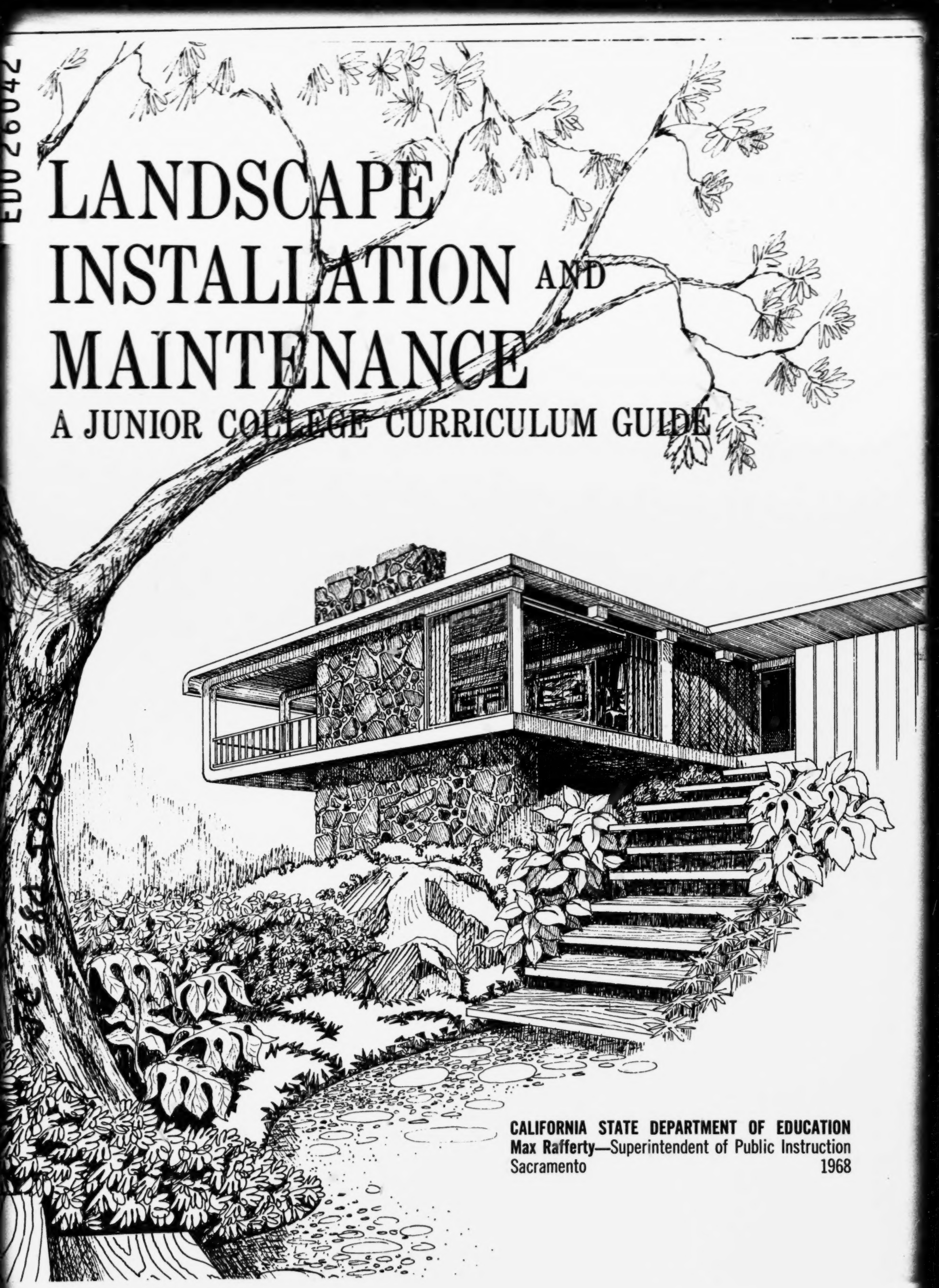
LANDSCAPE INSTALLATION AND MAINTENANCE

A JUNIOR COLLEGE CURRICULUM GUIDE



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CALIFORNIA STATE DEPARTMENT OF EDUCATION
Max Rafferty—Superintendent of Public Instruction
Sacramento 1968

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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LANDSCAPE INSTALLATION AND MAINTENANCE

A JUNIOR COLLEGE CURRICULUM GUIDE

Prepared Under the Direction of

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JC 680 S06

FOREWORD

Californians place high value on the natural beauty of their state, and they are spending large sums of money to preserve that beauty. They are also spending equally large numbers of dollars to beautify the landscape, especially the areas around their homes and business establishments. Never before in the history of the state has the interest in landscaping been as great as it is today, and never before has the need for trained landscape technicians been as large.

To help meet the demand for qualified landscape installation and maintenance personnel, many California junior college agriculture departments have developed curriculums designed to help train such persons. In many instances the Department of Education has assisted the various junior colleges that now offer courses for persons interested in becoming landscape technicians.

This guide represents another of the Department's efforts to help junior colleges wishing to establish new programs in landscaping and to help those wishing to strengthen programs already in operation.

Max Rafferty

Superintendent of Public Instruction

Of the 32 state junior college vocational agriculture departments, 21 currently provide some training in the field of landscape installation and maintenance.

PREFACE

California public junior colleges have produced some outstanding examples of the ability of education to meet the agriculture employment needs of our changing society. One such example is in the area of landscaping. Of the 32 state junior college vocational agriculture departments, 21 currently provide some training in the field of landscape installation and maintenance. Of the programs in these junior colleges, 11 have been developed rather recently, and six new programs in landscaping are anticipated in the near future.

Many California junior colleges have conducted community research studies to determine the employment needs in agriculture and its related industries. These studies have pointed out the importance and need for trained personnel in the landscape trade. Successful programs at Modesto Junior College, Los Angeles Pierce College, Ventura College, Mount San Antonio College, and many other California junior colleges attest to the need for well-trained landscape installation and maintenance people. This fact is further brought out by the success of many gardener training programs conducted by junior colleges in California under the Manpower Development and Training Act and the placement of persons enrolled in this program.

It is hoped this curriculum guide will assist the junior colleges in California in developing realistic landscape curriculums. Information is contained in this guide on landscape trade needs and program planning and development to meet those needs.

Counselors will find useful information on job opportunities as well as a description of the skills performed in the landscape trade.

It is highly recommended that each community college survey and evaluate its local training needs prior to establishing a landscape curriculum. Junior colleges with agriculture programs may want to reevaluate their offerings in light of the material contained in this guide.

The Department of Education expresses its appreciation to the many persons who have assisted in the development of this junior college curriculum guide. The advisory panel consisted of James Dixon of Los Angeles Pierce College, George Dobbins of American River College, Donald F. Rodrigues of Ventura College, Dwight Wait of Modesto Junior College, and James D. Watson of Reedley College. This panel met all day on two separate occasions to review the draft and make recommendations for the manuscript. The final draft of the manuscript was prepared by Mr. Rodrigues and Mr. Watson. We also express our appreciation to those junior colleges that cooperated by making their landscape horticulture instructors available to serve as advisory panel members. The following persons, who are active in the landscape maintenance field, reviewed the material: Ralph Crane, Personnel Director for the

Department of Recreation and Parks, City of Los Angeles; William H. Armstrong, Landscape Specialist, California State Division of Highways; and Robert Sapien, President of the California Landscape Contractors' Association. The experience and knowledge of all these people have helped to give direction in the preparation of this curriculum guide.

To all those who so unselfishly contributed time and energy to the development of this guide, we express our gratitude. We hope all junior colleges in California will benefit from these guidelines.

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Opportunities in landscape installation and maintenance range from job entry at the groundsman level to landscape specialist. Photo by Mike Moore.

Initiating a Program

Job opportunities in landscaping have increased rapidly during the past two years, and there are indications that the job opportunities in this area will continue to increase. This increase can be attributed to several factors: (1) the growth in construction of residences, industrial facilities, public and private recreation areas, highways, public buildings, and downtown malls; (2) the recent state and federal emphasis on highway and community beautification; (3) city beautification projects; (4) the public's interest and increased financial ability to provide landscape beautification; and (5) the increased amount of time people use for traveling and taking part in outdoor recreation activities. With this increase in job opportunities, the need for colleges to develop programs in landscaping has become greater.

The greatest number of employment opportunities in the field of landscape horticulture are for those trained in landscape installation and maintenance. The job opportunities range from job entry at the groundsman level to landscape specialist. The job opportunities exist with state, county, and city governments; school districts; cemeteries; park and recreation departments; golf courses; industrial sites; offices; and private companies. Many individuals have also found opportunity for self-employment in this field.

Included in the appendix to this guide are several examples of job descriptions for landscape installation and maintenance work in California. Most of the jobs do not require a four-year college degree; therefore, vocational landscape training at the junior college level can provide persons with realistic experiences that can lead to immediate employment in a needed agricultural occupation.

PROGRAM ASSISTANCE

Schools interested in developing a curriculum for courses in landscaping will find many sources of help available in California. Local sources should be investigated first. Local nurserymen, architects, wholesalers, contractors, or landscape suppliers can provide much help in planning the curriculum.

The primary sources in California that can provide assistance to those colleges interested in developing a curriculum for courses in landscape maintenance and installation are listed below. These sources can aid the college in organizing the curriculum, and they can provide information concerning financial aid projects that schools may apply for in the development of a program:

Bureau of Agricultural Education, or Bureau of Junior College Vocational-Technical Education, California State Department of Education, 721 Capitol Mall, Sacramento, California 95814

Regional Supervisor, Bureau of Agricultural Education, California State Department of Education, 1919 21st Street, Sacramento, California 95814; Room 5044, State Building, 2550 Mariposa Street, Fresno, California 93721; 47 Warner Street, Chico, California 95928; Room 4064, State Building, 1111 Jackson Street, Oakland, California 94607; California State Polytechnic College, San Luis Obispo, California 93402; or 809 State Building, 217 W. First Street, Los Angeles, California 90012

Supplemental assistance may be obtained from each of the following associations and persons who are actively engaged in the landscape industry:

Better Lawn and Turf Institute, Route 4, Kimberdale, Marysville, Ohio 43040

California Association of Nurserymen, 1005 Eighth Street, Sacramento, California 95814

Golf Course Superintendents' Association, 590 South Burlingame Avenue, Los Angeles, California 90045

Landscape Contractors' Association, 2650 Russell Street, Berkeley, California 94705

National Shade Tree Conference, c/o Ohio State University, Department of Horticulture, Columbus, Ohio 43210

Southern California Turf Grass Council, University of California, Riverside, California 92507

Sprinkler Irrigation Association, 1318 Second Street, Santa Monica, California 90401

Western Agricultural Chemicals Association, 2466 Kenwood Avenue, San Jose, California 95128

Other sources of information and assistance are junior college agriculture departments now offering courses in landscape horticulture; city, county, and state park directors; landscape specialists for the California State Division of Highways; local landscape farm advisers; park and recreation societies; arboretum societies; and landscape gardeners' associations.

ADVISORY COMMITTEE

An advisory committee can prove very valuable in establishing and conducting any vocational education program. For landscape installation and

maintenance education, the committee should be composed of employers and employees in the field and other interested persons who can make a substantial contribution to the work of the committee. Six to ten members are recommended.

During the planning stage, the committee should hold monthly meetings, but after the program has been established, two to four meetings annually should be adequate. Every effort should be made to keep the members informed of the college landscape program and to use their knowledge in the conduct of the program.

Copies of a booklet on establishing and using an advisory committee are available from the Bureau of Agricultural Education in Sacramento.

COMMUNITY RELATIONS

Many activities can be conducted by the college staff to promote community support for the landscape curriculum. Some examples follow:

Having regular news and radio releases prepared

Holding regular meetings with the advisory committee

Participating in related community activities

Promoting and developing community beautification programs

Promoting annual guided landscape tours

Hosting related society and professional group meetings

Encouraging society and professional groups to host an annual day meeting for students to introduce them to the various landscape professions

Encouraging local associations to provide scholarships or grants to students

Sponsoring community landscape field days for such demonstrations as rose pruning

Presenting educational programs to public and civic organizations

Encouraging the college staff to provide and direct vocational and avocational courses in the extended day and evening programs

Developing the Curriculum

The responsibilities of landscaping vary considerably; therefore, the training experiences must be rather comprehensive. Landscape installation and maintenance activities may involve skill in any or all of the following tasks:

- Determine needs and fertilize trees, shrubs, and turf.
- Determine water requirements and irrigate trees, shrubs, and turf.
- Check for pest damage and fertilizer deficiencies.
- Proportion and apply insecticides, herbicides, fungicides, and fumigants.
- Operate various power equipment safely.
- Prune, train, maintain, and repair shrubs and trees.
- Interpret landscape designs and specifications for planting, construction, and irrigation installation.
- Estimate costs.
- Adjust and repair sprinkler systems.
- Install and maintain turf areas.
- Select appropriate, healthy species of shrubs and trees.
- Keep records and prepare reports.
- Recognize and observe all safety practices.

RECOMMENDED COURSES

To provide the knowledge required to perform such tasks, colleges should offer several basic courses. Each course should be designed to provide the knowledge, practical laboratory skills, and work experience a person needs for job entry proficiency. Examples of job specifications appear in the appendix.

Suggested courses or units necessary for instruction in landscape installation and maintenance, with course descriptions, follow.

Applied Botany

In applied botany, the student studies the practical aspects of plants and their growth, environmental relationships, physiology, structure, function, reproduction, and evolution. The course is designed primarily for the vocational-technical student. Independent study projects are included in the coursework, and field laboratories are provided for carrying out such projects.

Soils and Fertilizers

A course dealing with soil, plant, and fertilizer relationships includes the study of the following: physical, chemical, and biological properties of soils as related to agriculture; soil sampling and testing, organic materials, water relationships, pH, and the use of soil maps; and the composition, value, selection, use, and application techniques of fertilizer materials and soil amendments.

Irrigation

Plant-soil-water relationships, and the sources, storage, and measurement of irrigation water are studied in a course on irrigation. Included in the study would be an examination of drainage systems and methods of distribution, land grading calculations, sprinkler design and installation, and laws and regulations applying to installations.

Operation and Maintenance of Power Equipment

In a course on power equipment, the student learns how to select, operate, adjust, and maintain landscape power equipment. He learns the fundamental principles of small gasoline engines and tractors, their operation, tune-up, and care, with special emphasis on power turf equipment.

Landscape Design and Interpretation

In a course in landscape design and interpretation, the principles of landscape design are outlined for the student. He is given instructions in the use of plant material according to texture, color, mass, growth, and environmental requirements; drawing and layout techniques; the reading of landscape blueprints and making interpretations for installation; and preparing a plan and writing specifications.

Turf Management

In a course on turf management, the student receives instruction in the maintenance and management of turf areas, including golf courses, athletic fields, parks, and areas around commercial buildings and private residences.

Turf identification, planting techniques, diseases and pests, fertilizing, irrigating, and power equipment for turf areas are included in the course of study.

Plant and Tree Identification, Installation, and Maintenance

The student studies the identification, growth habits, cultural requirements, and landscape use of ornamental shrubs, vines, ground covers, and trees adapted to the climates of California. In the course he also learns about proper planting and maintenance techniques.

Insects, Weeds, Diseases, and Rodent Control

The symptoms, identification, and methods of control of the principal diseases, pests, and weeds of importance in California and to the landscape industry are studied in this course on control. The student also studies materials, equipment, and application techniques as they relate to the subject. Special emphasis is given in the course to chemical, biological, and cultural control and prevention.

Landscape Construction and Cost Estimation

In this course, the student studies cost finding and estimating for the landscape trades. He learns about contract writing and legal aspects of the landscape trade, as well as planting and construction techniques.

Basic Mathematics, Report Writing, Recordkeeping, and Personnel Supervision

The student enrolled in this course studies the following: practical mathematics for work in the industrial-technical field; fundamentals of grammar and usage and technical and scientific writing, including preparing written reports, memorandums, and specifications; and responsibilities of a supervisor, organization, duties, human relations, grievances, training, rating, promotion, quality and quantity control, management-employee relations, safety, and basic psychology.

CURRICULUM PROGRAMS

To provide a complete landscape installation and maintenance program, the college should be prepared to develop curricula at the following levels:

- A. A. Degree and Technician Program -- Provides training that will enable the student to become qualified to perform supervisory work
- Certificate Program -- Normally consisting of 20 to 30 junior college units in a specified vocational field as determined by that department

- Inservice Training -- Upgrading persons presently employed in the field of landscape installation and maintenance who lack all or part of this training (includes special short courses)

- Less than Certificate Program -- Minimum maintenance training jobs for students with limited achievement ability

A list of suggested landscape textbooks and references is available from the Department of Education. This may be obtained by writing to Consultant in Agricultural Education, Bureau of Junior College Vocational-Technical Education, 721 Capitol Mall, Sacramento, California 95814. This list is revised regularly to include current publications.

WORK EXPERIENCE PROGRAMS

Junior college districts are authorized to establish and maintain work experience programs under the provisions of sections 8351--8358 of the Education Code. In accordance with Education Code Section 8352, the State Board of Education has established standards and guidelines for the development of work experience programs (sections 115.20--115.26, California Administrative Code, Title 5, Education).

Students enrolled in landscape work experience programs gain experience by working within school district grounds, on public and private golf courses, on state highway landscaping projects, with local landscape contractors, and on state, county, and city parks. By cooperating with the agencies involved and by following the state guidelines for work experience programs, the school district may conduct a realistic work experience program in landscape installation and maintenance.

The work experience program should be constantly evaluated, and an organized system of student follow-up should be maintained. The California State Department of Education's Handbook on Work Experience Education contains suggestions for evaluating such programs, and it provides guidelines on the following:

Factors to consider before starting a work experience education program

Steps to take in planning a work experience program

Responsibilities of the school coordinator

Employer's responsibilities

Legal aspects of work experience

Public relations

Evaluation [1]

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[1]Handbook on Work Experience Education, A Guide to the Organization and Operation of Work Experience Education Programs. Sacramento: California State Department of Education, 1965.

The handbook also contains those sections of the Education Code and the California Administrative Code, Title 5, Education, mentioned earlier.

The recommended credit allowance for work experience is one semester hour for each five hours of work experience per week. When the A. A. degree student is limited to one unit (90 hours) per semester of work experience, this time should be supplemented by at least one summer of vocational work experience with a cooperating agency. This would not necessarily be recommended for the student who might be enrolled in two to three units of work experience per semester. Summer work experience can provide many students with opportunities to gain considerable job proficiency prior to their entering full-time employment.

The student studies materials, equipment, and application techniques, and observes all safety practices. Photo by Mike Moore.

Selecting Instructors and Facilities

To teach graded classes in California junior colleges, the instructor must qualify for one of the following credentials as prescribed in the California Administrative Code, Title 5, Education:

General Secondary (not presently issued since the enactment of the Fisher Bill on credentials)

Junior College (Master's degree required in the subject matter field)

Standard Designated Trades and Industry (requires formal education plus work experience in the trade)

Standard Designated Subjects (issued to persons of outstanding eminence)

Special Secondary in Vocational Agriculture (not presently issued since the enactment of the Fisher Bill)

Certain classes for adults may be taught on a limited basis by persons with a demonstrated proficiency. The dean of the evening school of the local junior college can provide credential information for instructors of evening classes.

SOURCES OF INSTRUCTORS

Assistance in obtaining qualified credentialed landscape instructors can be obtained primarily from the following sources:

Consultant in Agricultural Education
Bureau of Junior College Vocational-Technical Education
721 Capitol Mall
Sacramento, California 95814

Chief, Bureau of Agricultural Education
California State Department of Education
721 Capitol Mall
Sacramento, California 95814

Agricultural Education Department
University of California
Davis, California 95616

Chairman, Agriculture Education Department
California State Polytechnic College
San Luis Obispo, California 93402

Assistance may also be obtained from any of the regional supervisors in the Bureau of Agricultural Education, California State Department of Education, in Chico, Fresno, Los Angeles, Oakland, Sacramento, and San Luis Obispo.

By using any of the sources cited, the school can save time in securing qualified instructors who are or can be credentialed within the framework of the California Plan for Vocational Education.[1] Many of the available instructors have had occupational experience as well as the prescribed formal education. Constant efforts are being made to attract landscape instructors with occupational experience to the field of junior college landscape instruction. Each junior college district may want to contact local landscape associations, nurserymen, contractors, architects, and others associated with the landscape industry for persons they feel would be qualified to teach courses in landscape installation and maintenance.

FACILITIES FOR THE PROGRAM

A combination lecture and laboratory classroom is needed for conducting the formal portion of the landscape installation and maintenance curriculum. In those junior colleges that already have agricultural departments or those in which large enrollments are expected, it is desirable to provide lecture facilities separate from laboratory facilities. For many, however, the combination classroom-laboratory is economical and practical.

The combination classroom-laboratory should include sink facilities as well as gas, water, and electrical utility hookups to each laboratory station. Such facilities will allow the instructor to conduct extensive studies in the various landscape subjects. Storage areas, classroom preparation areas, and office space should also be provided adjacent to the classroom facility.

The classroom assignments for the courses in this curriculum will require the student to make drawings of landscape designs, to read blueprints, and to develop cost estimates. It is recommended that the college facilities for drawing be utilized for those activities requiring the use of such facilities. An alternative is to build a larger combination lecture and laboratory classroom and provide drawing tables on the perimeter of the room. This type of plan has proved very successful at the Modesto and Los Angeles Pierce College agriculture departments.

A landscape field laboratory of about two acres is needed in order to provide the area for conducting some of the required activities. This facility requires both water and electrical utilities. If evening inservice training programs are conducted, lights will be needed.

A moderate-sized lath (saran) house is needed to keep plants that students will be using in many of their laboratory activities. It is further recommended that a field laboratory building be provided for use as a preparation area for plants and equipment prior to field use. This facility can serve as a demonstration area, outdoor classroom, and a place to maintain and repair landscape equipment. Storage space for tools, equipment, and supplies could be

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[1] California Plan for Vocational Education. Sacramento: California State Department of Education, 1967.

provided in this facility. The size and design of the building should be determined by the purposes for which it is to be used, the financing available, and the enrollment in landscape courses. Many schools find a rectangular building, 30 feet by 60 feet with double garage-type doors on each end ideal for most field laboratory buildings.

Many junior college landscape departments develop a cooperative agreement whereby a portion of the campus is utilized by landscape students for their installation and maintenance activities. The landscape department will often utilize the entire campus for plant identification. Landscape instructors are encouraged to work closely with the college architect, grounds staff, and others concerned with the campus landscaping. Every effort should be made to develop a nicely landscaped campus with a large variety of plant materials.

INSTRUCTIONAL EQUIPMENT

Extensive and varied equipment is required for conducting classes in landscape installation and maintenance. Although all of the equipment can be purchased by the junior college, it is not always economically practical due to the limited instructional use made of some of the equipment and high cost of some items. Therefore, it is recommended that some of the equipment be rented on either a daily or annual basis. Renting also has the advantage of making it possible for students to use the latest models of equipment. A suggested list of equipment for conducting a landscape installation and maintenance curriculum follows:

- Turf aerator
- Vertical mower
- Sod cutter
- 10-12 h.p. garden tractor
- Rototiller or attachment for tractor
- Standard size tractor
- Loader and scraper for tractor
- Disc harrow
- Estate mower
- 21-24" close cut (1/4") mower
- Seeder
- 18' x 24' lawn roller
- Edger
- Tensiometers
- Solubridge
- Fumigant applicators
- Turf pluggers
- Drawing equipment
- Screen roller
- "Sprig" roller
- Tree surgery equipment
  - Spoons
  - Mallets
  - Scrapers
  - Wood rasps
- Trencher
- Scarifier
- Hammer knife mower
- Two 30-50 gal. power sprayers
- 16" chain saw
- Power leaf vacuum
- Lawn sweeper
- Two-man power auger
- Fertilizer spreader
- Fertilizer injector
- pH kits and meters
- Soil test equipment
- Soil sampling tubes
- Automatic clock turf sprinkling system
- Hand tools
  - Bailing spades
  - Rakes (lawn and garden)
  - Hoes
  - Carpenter squares
  - Weeders
  - Water injectors
  - Can cutters
  - Brooms
  - Square and pointed shovels
  - Mattox and picks
  - 10-14" pipe wrenches

Hand tools (continued)
- Pipe cutter
- Pipe threader
- Pipe reamer
- Measuring tapes (100')
- Levels
- Hammers
- Hand and power saws
- Mortar tools
- 3/8" socket set

2-3 gal. sprayers
1/2" rope
Clean-up canvases
Wheelbarrows (4-1/2 cu. ft.)

Bracing materials
- Turnbuckles
- Eye bolts
- Cable

Pruning shears
Pruning loppers
Pruning saws
Pruning pole saws
Pruning pole shears
10' ladders
Concrete mixer
Garden hoses
Transit and rod
Hand carts

Many junior college landscape departments develop a cooperative agreement whereby a portion of the campus is utilized by landscape students for their installation and maintenance activities.

Enrolling the Student

Most young people are not aware of the advantages of a career in landscaping. Therefore, every possible means should be explored to promote the college landscape program. Encouraging students to consider careers in landscape installation and maintenance should be a continuous effort. An extended effort must also be made to inform parents and counselors of opportunities in this field. The landscape instructor will have to keep continually abreast of new developments in the landscape industry and should expect to disseminate this information to students, parents, counselors, and others concerned.

A few suggestions to aid in the recruitment of students and the dissemination of information are listed here:

- Maintain constant liaison with industry and secondary school counselors and agriculture departments.
- Sponsor annual Future Farmers of America field day activities. Guidelines for these activities are included in materials prepared by the California Agricultural Teachers Association.
- Conduct annual counselor orientation activities.
- Prepare and distribute college program and career brochures on landscaping.
- Offer department scholarships.
- Present programs on landscaping to junior high school and high school groups.
- Have a graduate of the landscape and installation program speak to high school classes.
- Conduct an open house and career night.
- Participate in the college freshman orientation program.
- Work with community youth groups such as the 4H and Explorer Scouts
- Sponsor a landscape club on campus. Participate in college and community programs.
- Prepare specialized programs for high school and college science courses.
- Coordinate course offerings and activities with other college departments, such as art, science, business, and architecture.

Placing the Graduate

A junior college should provide job placement service for landscape majors and graduates seeking jobs for which they are trained. To provide effective service, several key people on the college staff must be involved; it is highly important that the counseling staff be utilized in this regard.

It is also desirable to have a vocational counselor who can counsel entering students regarding job opportunities in landscaping installation and maintenance. The counselor could assist in ascertaining the needs of the landscape labor force, and he could also aid in conducting the necessary evaluations of the jobs available for landscape majors.

LIAISON WITH INDUSTRY

The landscape instructional staff should be responsible for establishing liaison between the college and the landscape industry. To establish sound working relationships with industry, the instructors should attend landscape meetings and be in communication with local landscape people. The relationships developed will aid in the placement of well-trained students from the college's program.

Finally, the placement service should be organized and conducted through the college job placement officer. Inquiries from the labor market about candidates for job openings should be directed to his office. Job candidates should apply at the college placement office for information concerning job opportunities in the landscape industry. The placement officer, working closely with the landscape instructional staff, can set up a sound placement service. Through contacts with the landscape labor market, the college can keep up to date regarding the need for landscape installation and maintenance personnel, the skills they need to have to be considered for the jobs available, the salaries being paid, and advancement possibilities.

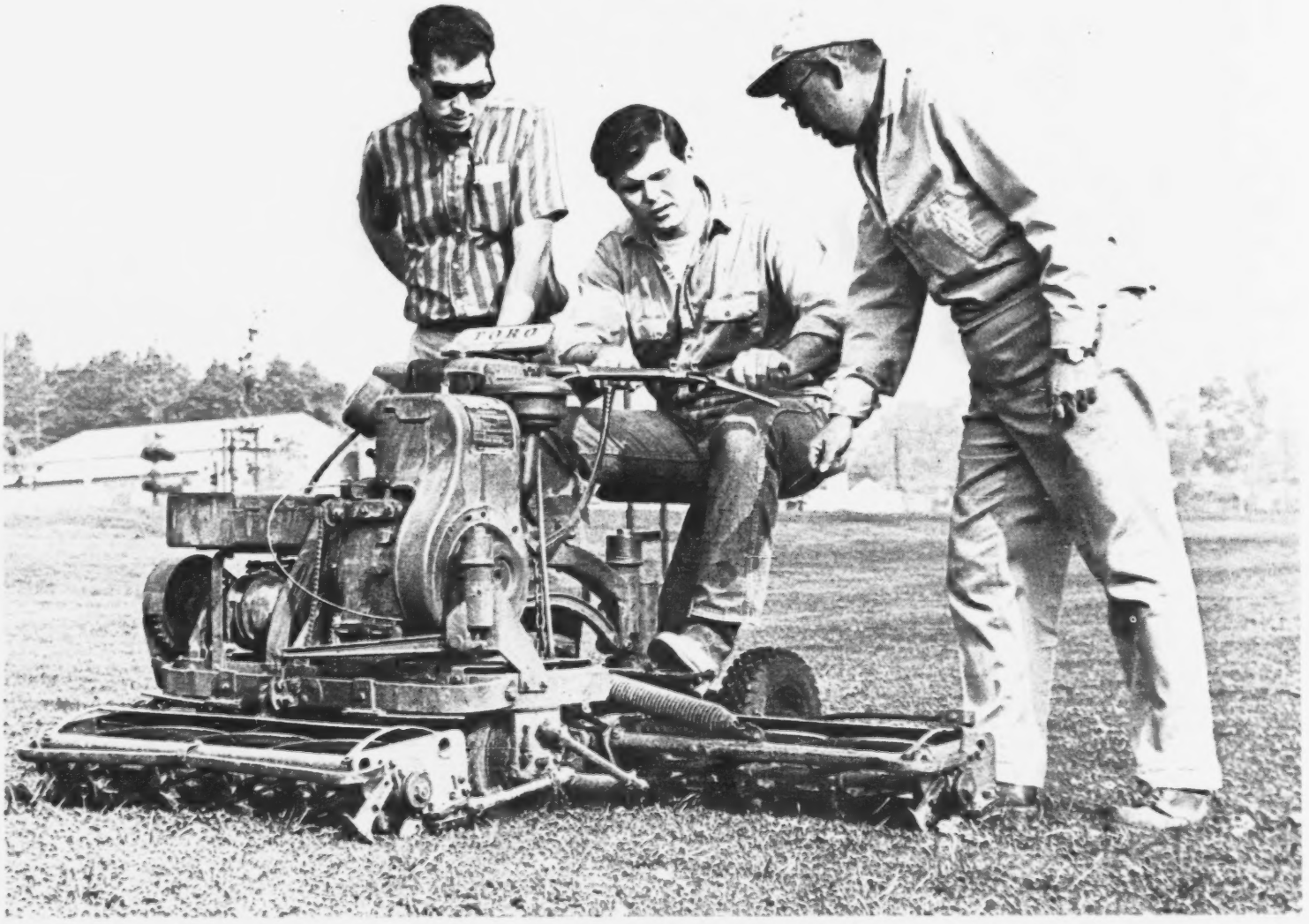
FOLLOW-UP OF GRADUATES

The faculty responsible for a college's instructional program in landscaping must accept the responsibility for conducting follow-up studies which will provide the necessary data for evaluating the program's curriculum. The effectiveness of instruction is demonstrated primarily by the knowledge and skills exhibited by the students on the job. Many colleges do a follow-up of their graduates in a variety of ways; e.g., by encouraging them to write about their experiences in their jobs, by talking with local employers who have hired graduates, by observing graduates at work, and by obtaining reports from employers and others in the landscape trades. Information obtained from

the follow-up of placed landscape students is one of the most realistic guides for curriculum evaluation.

Each college should develop a systematic follow-up procedure. Follow-up information should consist of the graduate's name, address, where he is employed, his job title, pay scale for the job he holds, changes in occupation or job responsibilities since the last follow-up study was conducted, skills used in his work, evaluation of the training he received in college, new skills or training needed, and other information desired by the local landscape department or college. It is recommended that a standard form be developed and data processing methods be used to compile and store information. Each student leaving the department should have a folder on file which contains his work experience, college work, and follow-up information. All students placed in jobs should be encouraged to keep the college informed as to their activities.

In a course on power equipment, the student learns how to select, operate, adjust, and maintain landscape power equipment. Photo by Mike Moore.



Golf courses require varied and intensified maintenance. Besides performing duties related to the physical maintenance of the course, the greenkeeper establishes effective working relations with the golf course professional and staff, and golf course users. He might recommend rules for golf course use and perform other public relations duties. Photo by Mike Moore.

Appendix A

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Appendix B

MEMORANDA RELATED TO AND JOB SPECIFICATIONS FOR LANDSCAPE PERSONNEL

- Memorandum from California Division of Highways
- Memorandum from City of Los Angeles
- Gardener Caretaker Job Specifications for City of Los Angeles
- Greenkeeper Job Specifications for Sacramento County
- Highway Landscape Foreman Job Specifications for State of California
- Highway Tree Maintenance Foreman Job Specifications for State of California
- Senior Gardener Job Specifications for Ventura County Junior College District

State of California

Memorandum

To : Department of Education
Attention: Ralph E. Matthews
Consultant in Agricultural Education

Date : August 17, 1966

File No.: 900

From : Department of Public Works - Division of Highways
Headquarters Maintenance

Subject: Job Opportunities in Highway Landscape Maintenance

This is in reply to your letter of August 10, 1966, to Mr. Armstrong, requesting information relative to job opportunities in highway landscape maintenance.

Last winter the plant establishment period on landscape contracts was extended from 90 to 250 working days. This curtailed hiring men for landscape maintenance until after the end of the extended period.

The following chart shows the number of men working for us at the end of each fiscal year and, based on estimated budget figures, the number to be hired in the next two years:

Date	No. Men
January, 1962	546
June, 1963	652
" 1964	709
" 1965	788
" 1966	805
" 1967	905
" 1968	1,081

The Legislature has placed a ceiling of ten million dollars on the amount of money to be spent for highway landscape maintenance. At our present annual cost per man, this would allow a total of approximately 1,300 men. We feel that the ceiling will be raised again if the planting program continues and the need for additional funds is justified.

Our Design Department informs us that the budget for the coming year for planting roadsides and developing roadside rests will amount to approximately sixteen million dollars. The exact breakdown is not presently known, but landscape maintenance men may be hired to maintain roadside rests where the more elaborate plantings are installed.

We hope this may be of use to you in planning a much needed program for landscape maintenance personnel.

If we may be of further help, please let us know.

J. D. WOMACK
State Highway Engineer

By Edward L. Tinney
Edward L. Tinney
Maintenance Engineer

CITY OF LOS ANGELES
CALIFORNIA

COMMISSIONERS

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DEPARTMENT OF
RECREATION AND PARKS
505 CITY HALL
LOS ANGELES, CALIF. 90012
624-5211

WM. FREDERICKSON, JR.
GENERAL MANAGER
CHESTER E. HOGAN
EXECUTIVE OFFICER

September 28, 1966

Mr. Ralph E. Matthews
Consultant in Agricultural Education
State of California - Department of Education
721 Capitol Mall
Sacramento, California 95814

Dear Mr. Matthews:

Our entrance level position in landscape maintenance for the junior college graduate is Gardener Caretaker, which is presently compensated at a salary of $452 to $560 per month. Our Department has over 430 of these positions and there is a constant need for qualified applicants. Gardener Caretakers typically promote to higher level positions in grounds maintenance, horticulture, forestry, and related fields.

The junior college graduate should have a decided advantage in promoting within our Department and promotional opportunities are excellent. The Department is expanding as the public is requiring both more recreational areas and a more intensive level of maintenance in existing recreational areas. Present plans call for trainee or apprenticeship programs in parks maintenance and employees with college training will be especially desired for these programs.

Yours very truly,

Ralph Crane

Ralph Crane
Personnel Director

RC:jw
Encl. 1

THE CITY OF LOS ANGELES HAS A JOB FOR YOU

GARDENER CARETAKER

THE SALARY range is $452 to $560 per month.

REVISED
(2-24-67)

THE DUTIES

A Gardener Caretaker does routine gardening, landscape construction, and maintenance work in the care of parks, playgrounds, and other landscaped areas; and does related work.

THE REQUIREMENTS

1. Graduation from high school and one year of full-time paid gardening experience; or

2. Graduation from high school and completion of a course in gardening in a recognized school.

3. One additional year of gardening experience may be substituted for each year of school education lacking.

A valid Class 3 driver's license issued by the California Department of Motor Vehicles may be required prior to appointment.

APPLICATION and $1.00 filing fee will be received in Room 100, Los Angeles City Hall, or at the Information Window, Van Nuys Branch City Hall until sufficient applications are received. Filing may be closed without prior notice.

THE EXAMINATION

This is a continuous examination. There will be no written test. The examination score will be based entirely on an evaluation of knowledge of gardening methods and training, experience, and personal qualifications by interview.

Candidates may take this examination only once every six months. For the purpose of establishing eligible lists, filing will close on the third Friday of each month and reopen on the following Monday.

Candidates' names will be removed from the open eligible list after six months.

Candidates will be notified at the time of filing of the date and place of examination.

THIS EXAMINATION IS TO BE GIVEN BOTH ON AN INTERDEPARTMENTAL PROMOTIONAL AND AN OPEN COMPETITIVE BASIS

Code No. 3141 . . . Prom. No. 910 . . . Open No. 911 . . . 6-17-66

Obtain applications and information in Room 100, L.A. City Hall or at City Hall Branches in San Pedro, Van Nuys, West L.A., Westchester, and Venice.

GARDENER CARETAKER
$452 to $560

Apply now by mail or in person: PERSONNEL DEPT., Room 100, L.A. City Hall — 624-5211, or Information window, Van Nuys Branch City Hall.

SEE REVERSE SIDE FOR FURTHER INFORMATION

While most positions pay at least the minimum shown, some positions may have a maximum rate below the top rate shown.

A. FILING FEE

This fee can be returned **only** if the examination is cancelled or you entered the military service.

B. OPEN COMPETITIVE EXAMINATIONS

In order to apply for an Open Competitive examination, you must meet the following requirements:

1. You must have the minimum qualifications stated on this bulletin.
2. You must be a citizen of the United States. If you are a naturalized citizen, you must present proof of citizenship before you can be considered for employment.
3. You must be under the compulsory retirement age. The compulsory retirement age in the Department of Water and Power is 65 for men and 62 for women. In other City departments the compulsory retirement age for men and women is 70 years.
4. If you are entitled to military credits, you must present satisfactory proof of service in Room 100, Los Angeles City Hall, or at the Information Desk in the Van Nuys City Hall, as soon as possible. If you are in military service when the test is held, you may present proof of your honorable discharge after your release from active duty. Candidates entitled to military credits will have 10 points added to passing scores.
5. Uniformed employees retired from the Police or Fire Department are not eligible for civilian jobs in those departments.

The Promotional list is used before the Open Competitive list.

Unless specifically stated, residence in the City of Los Angeles is not required.

C. CONVICTIONS, ARRESTS, AND WORK RECORD

1. You must list every criminal offense for which you have been convicted, fined, imprisoned, placed on probation or received a suspended sentence, except traffic citations, under Questions 13 on your application. All such offenses, including those when you were a juvenile, even if expunged, those while in military service, and those where a warrant was issued because you failed to pay traffic tickets soon enough, must be reported. In case of doubt, answer "Yes" and explain.
2. Your fingerprints will be checked by the FBI and you will be disqualified if you fail to report all offenses for which you were convicted, or punished in any other way.
3. The policy of the Civil Service Commission is to require a clear record free from probation and arrests except those of a minor nature for at least one year prior to the date of the examination. In any case, all arrests will be reviewed and investigated where necessary. Any arrest which may affect adversely your effectiveness as a City employee, will result in disqualification.
4. Your previous employment will be carefully checked and you will be disqualified if you have an unsatisfactory work history.

NOTE: Applications are checked at time of filing; however, the complete check is not made until it is known whether you passed the examination. Therefore, it is possible that disqualification may not take place until after you have completed the examination.

D. MINIMUM SCORES

Unless otherwise stated, a minimum score of 65.00% in the written test, including senority credits of 0.25 of a point for each year of continuous classified City service, is necessary in order to be called for subsequent portions of the examination. A final average score of 70% is required in order to be placed on the eligible list.

E. ELIGIBILITY

If you pass the examination, normally your name remains on the eligible list for two years, if not sooner appointed. However, the Civil Service Commission may in some cases remove names from the eligible list after six months.

F. PHYSICAL REQUIREMENTS

Candidates before or shortly after appointment to the City service will be required to meet high medical standards as determined through examination by a City physician. Failure to pass this examination results in disqualification or termination of appointment.

G. CIVIL SERVICE SCHOOLS

The City Civil Service Commission has no connection with any school or individual offering courses in preparation for civil service tests and is not responsible for any statements made by them.

H. Out-of-town applicants may be required to make more than one trip to Los Angeles if the examination consists of more than one part.

Sacramento County
Civil Service Commission

Adopted: 7/16/63
Revised:
Title Change:

GREENKEEPER

Definition:

Under direction, to be responsible for the care and maintenance of a golf course; and to do related work as required.

Typical Tasks:

Cares for and maintains a golf course and related facilities in the best possible condition for play; trains and supervises subordinate personnel in the performance of maintenance duties; inspects tees, greens, fairways, sand traps and other facilities for condition and maintenance needs; makes adjustments and recommends changes in maintenance procedures; determines need for and recommends major maintenance projects such as fertilization, disease control, top dressing, spiking of greens and rebuilding or resodding of tees; personally performs some of the more responsible maintenance work; recommends alterations and repairs of structures, landscaping, irrigation systems, and other facilities; coordinates maintenance, repairs, and other work performed by service contract; acts as inspector of golf course construction on the first County golf course to insure compliance with plans and specifications and makes recommendations regarding adequacy of work; recommends rules for golf course use and reports abuses; establishes effective working relations with the golf course professional and staff, county employees, and golf course users and performs assigned public relations duties.

Employment Standards:

Any combination of education and experience equivalent to completion of the eighth grade and two years of experience including the responsibility for the care and maintenance of a golf course or for golf course construction or construction inspection.

Knowledge of the methods, materials, tools, equipment, and safety practices used in golf course care and maintenance and ability to supervise their use; knowledge of greenkeeping, including such requirements as ground preparation, seeding, watering, fertilizing, mowing, rolling, spiking, and pest control; knowledge of the proper methods for determining maintenance requirements and ability to evaluate maintenance results; ability to effectively train and supervise a golf course maintenance crew; ability to establish effective working relationships.

Salary Range -- $710 - 782

CALIFORNIA STATE PERSONNEL BOARD

specification

CODE # 6294
ESTABLISHED: 2/6/64
REVISED: 1/21/65
TITLE CHANGED: --

HIGHWAY LANDSCAPE FOREMAN

Definition:

Under direction, to supervise and be responsible for the maintenance work on extensive landscaped areas along freeways and highways; to supervise and instruct assistants in this work and in highway maintenance work in emergencies; to inspect highway planting contracts for compliance with contract plans and specifications; and to do other work as required.

Typical Tasks:

Supervises employees in the replanting, cultivating, and caring for trees, shrubs, and various types of ground cover along highways and freeways; obtains, assigns, and maintains equipment, materials and supplies; supervises pest and noxious weed control work; secures permits for the use of hazardous chemical spray materials; supervises tree pruning and does minor tree surgery; maintains the proper drainage for roadside plantings; makes repairs and adjustments to irrigation systems and/or landscape maintenance equipment; maintains time and cost records; investigates and prepares reports of damage to highway facilities and makes repairs to landscape facilities and keeps costs thereof; directs and instructs assistants in their work and takes or recommends appropriate action; directs control of traffic and instructs employees in good safety practices; inspects highway planting contracts for compliance with contract plans and specifications; in emergencies works with and directs a crew in miscellaneous highway maintenance work.

Minimum Qualifications:

Possession of a California driver's license valid for the operation of any two-axle vehicle, except a bus designed to carry more than 15 passengers, and such vehicle towing another vehicle weighing less than 6,000 pounds gross.

and

Either I

One year of experience performing the duties of a Highway Landscape Leadingman or three years of experience performing the duties of a Highway Landscape Maintenance Man in the California state service.

Or II

Experience: Four years of experience in planting and cultivating flowers, trees, lawns, and shrubs and in general grounds maintenance work, at least one year of which must have been in the care and maintenance of public parks, large private estates, institutions, in commercial nurseries landscape work or in highway landscape work. (Completion of a two-year nondegree course in landscape design or ornamental horticulture or equivalent may be substituted for two years of the required experience.) and

Highway Landscape Foreman

Education: Equivalent to completion of the twelfth grade. (Additional qualifying experience may be substituted for education on a year-for-year basis for a maximum of four years.)

and

Knowledges and abilities:

Wide knowledge of: use of modern methods of propagating, planting, cultivating, and caring for trees, shrubs, flowers, and various types of ground cover; safety practices and traffic regulations.

General knowledge of: plant pests and diseases and of the methods for their control and eradication; methods, materials, equipment, and tools used in highway landscaping work; principles of effective supervision.

Ability to: plan, organize, and direct the work of others; identify flowers, trees, and shrubs commonly grown in California; plan minor highway landscaping projects; maintain sprinkling and drainage systems; operate and care for light maintenance and landscape equipment; inspect contract landscaping work for compliance with contract specifications; read and interpret landscaping plans and specifications; prepare preliminary budget estimates and reports; assist in work relating to the maintenance of highways; analyze situations accurately and take effective action.

Monthly Compensation: $624 644 676 710 746

Work Week Group: 1

Note: Salary information for this class was correct on 8/14/67. Any subsequent salary changes have not been recorded.

CALIFORNIA STATE PERSONNEL BOARD

specification

CODE # 0742
ESTABLISHED: 1931
REVISED: 10/7/65
TITLE CHANGED: --

HIGHWAY TREE MAINTENANCE FOREMAN

Definition:

Under direction, to work with and supervise crews of workmen engaged in planting and caring for ornamental and shade trees along highway rights of way; and to do other work as required.

Typical Tasks:

Plans, assigns, directs, inspects, and assists with the work of planting, cultivating, irrigating, and trimming ornamental and shade trees along highway rights of way; performs the more complex phases of the work; makes rough sketches and selects planting stock; supervises the application of vegetation and insect control chemicals; uses and supervises the use of aerial equipment; investigates accidents when State property has been damaged; trains employees; insures that proper traffic control measures and safety practices are followed; inspects for encroachment and issues permits for approval; keeps records and prepares reports.

Minimum Qualifications:

Possession of a California driver's license valid for the operation of any two-axle vehicle, except a bus designed to carry more than 15 passengers, and such vehicles towing another vehicle weighing less than 6,000 pounds gross.

and

Either I

Two years of experience in the California state service performing the duties of the class of Tree Maintenance Man II.

Or II

Four years of experience in the California state service performing the duties of the class of Tree Maintenance Man I.

Or III

Experience: Five years of experience in planting, trimming, and caring for ornamental and shade trees and shrubbery which shall have included work in trees at heights of more than 40 feet and the operation of heavy equipment. (At least two years of this experience must have been as a supervisor of a tree trimming crew.) and

Education: Equivalent to completion of the twelfth grade. (Additional qualifying experience may be substituted for the required education on a year-for-year basis.)

and

Knowledges and abilities:

Wide knowledge of: names and characteristics of the more common types of ornamental and shade trees in California; methods, safety practices, equipment, including aerial equipment, and materials used in planting, cultivating, trimming, and generally caring for ornamental and shade trees; methods and chemicals used in vegetation control; various types of insects and diseases that affect trees.

Working knowledge of: necessary rigging and tying of the various knots used in tree trimming work.

General knowledge of: principles of effective supervision.

Ability to: perform and direct the performance of this type of work; lay out work for others, direct them in their work, and get them to work together effectively; work at a considerable height above the ground.

and

Special personal characteristics: Tact, physical strength and agility.

Monthly Compensation: $614 644 676 710 746

Work Week Group: 1

Note: Salary information for this class was correct on 7/25/67. Any subsequent salary changes have not been recorded.

VENTURA COUNTY JUNIOR COLLEGE DISTRICT
Personnel Commission

JOB SPECIFICATIONS

SENIOR GARDENER

DEFINITION

Under general direction, to supervise and participate in the work of a crew of gardeners and groundsmen in maintaining school grounds; and to do related work as required.

TYPICAL TASKS

Assigns duties to gardeners and groundsmen and inspects completed work; confers with the supervisor of maintenance and operations in making plans for the planting and maintenance of the landscaped areas; instructs and assists in propagating and cultivating work required for the various plants; trains subordinates to perform skilled gardening duties; inspects grounds for needed maintenance care; prepares watering schedules, mowing schedules, and determines the need for spraying, fertilizing, and pruning; estimates probable costs of grounds maintenance, and recommends the purchase of supplies and materials needed in the grounds maintenance program; performs the more highly skilled groundskeeping duties, as well as semi-skilled tasks in other construction and maintenance work.

MINIMUM QUALIFICATIONS

Knowledge of:

Skilled gardening methods, landscaping techniques, and the best uses and growing requirements of plants, trees, and shrubs.

The proper use of fertilizers, the common diseases of trees and other plants, and the sprays used to control insects and weeds.

The tools, materials, and methods used in general maintenance work.

Ability to:

Plan and carry out schedules of groundskeeping activities.

Supervise effectively.

Experience:

Two years of experience in skilled gardening work.

Education:

Completion of the eighth grade or its equivalent.

Examination:

A written and oral qualifications appraisal based upon the above tasks and qualifications will be required. A minimum score of 70% on both exams is necessary.

Salary Range:

$481 - $605 per month

In a course in landscape design and interpretation, the student is given instructions in the use of plant material according to texture, color, mass, growth, and environmental requirements; drawing and layout techniques; the reading of landscape blueprints and making interpretations for installation; and preparing a plan and writing specifications.

Hv6-177 (1791) 75156--300 5-68 800